

REMARKS

Claims 8, 10-13, and 16 are pending in this application. By this Amendment, claims 8, 13, and 16 are amended and claims 9, 14, and 15 are canceled. Support for the amendments can be found, for example, in the original claims. No new matter is added.

I. Rejections under 35 U.S.C. §101 and §112

The Office Action rejects claims 13 and 16 under 35 U.S.C. §101 and §112, second paragraph because the claims are directed to a use without setting forth any steps involved in the method or process. Applicants respectfully traverse the rejection.

By this Amendment, claims 13 and 16 are amended to recite, "...wherein the concrete composition is an ultrahigh performance concrete." Thus, the claims are no longer directed toward a use. Accordingly, reconsideration and withdrawal of the rejections are requested.

II. Rejection under 35 U.S.C. §103

The Office Action rejects claims 8-16 under 35 U.S.C. §103(a) as obvious over WO 03/091180 to Yuasa et al. (Yuasa). By this Amendment, claims 9 and 14-15 are canceled and, thus, the rejection is moot as to those claims. As to the remaining claims, Applicants respectfully traverse the rejection.

The Office Action asserts that Yuasa teaches the claimed compounds A and B. The Office Action also asserts that Yuasa teaches that it is possible to combine a monomer of Yuasa formula (3) having an average molar number of addition of oxyalkylene in the range of 40 to 300 with another monomer of Yuasa formula (3) having the molar number of addition of oxyalkylene in the range of 2 to 40, and thus, the Office Action asserts that Yuasa teaches the claimed compounds C and D. Further, the Office Action asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the mixing ratio of the monomers for enhancing the water reducing capability and for obtaining an

adequate viscosity. However, Yuasa fails to teach or suggest each and every feature of amended claim 8.

Amended claim 8 is directed to a cement dispersant comprising a water-soluble amphoteric copolymer, the copolymer being formed by copolymerizing a monomer mixture containing at least 4 compounds (compounds A-D). Additionally, claim 8 recites the addition of polyalkylene glycol molecules in both compounds C and D (represented by formula (2) and (3) of claim 8 respectively) in specific combinations with compounds A and B. Yuasa does not teach or suggest such a cement dispersant.

Yuasa merely discloses compounds similar to compounds A and B and a compound similar to compound C or D. See Yuasa, page 65, line 32 - page 66, line 12; page 37, lines 17-29; and page 28, lines 11-25. Yuasa further teaches that two monomers with varying molar numbers of an oxyalkylene may be used in the monomer mixture along with compounds similar to A and B. However, Yuasa fails to teach or suggest that all 4 compounds (A-D) must be present in the monomer mixture. Further, Yuasa fails to teach or suggest that the copolymer should be formed by copolymerizing a monomer containing compounds A-D, and thus copolymerizing all 4 monomer compounds to form the copolymer.

The Office Action recognizes that Yuasa fails to teach the specific amounts of compounds A-D in the monomer mixture as recited in claim 8. However, the Office Action asserts it would have been obvious to optimize the mixing ratio of the monomers to enhance the water-reducing capability and obtain adequate viscosity. As discussed above, Yuasa only teaches the use of compounds similar to A-C (or D) and the use of two kinds of oxyalkylene monomers. However, Yuasa does not teach or suggest that using components A-D in well-balanced amounts, as recited in claim 8, has water-reducing properties, slump flow retention, rapid strength development, and reduction of high concrete viscosities when the water/binder ratio is low.

Furthermore, it would not have been obvious to one of ordinary skill in the art at the time of the invention to use the precise amounts of components A-D, as recited in claim 8, because the teachings of Yuasa are directed toward high-strength concrete (concrete where the water to concrete ratio (W/C) is above 30%), and the claimed invention is directed toward ultra-high-strength concrete (W/C=30% or below). See Yuasa, Table 1, page 93 (indicating that W/C=35 and 45%). Concrete viscosity, as well as other various concrete properties, does not become unworkable until ultra-high-strength concrete is formed. Yuasa does not teach or suggest that the amount of components A-D should be modified to address concrete viscosity, because concrete viscosity is not problematic when W/C is above 30%. Conversely, the claimed invention is directed to an ultra-high-strength concrete, and when W/C is less than 30%, specific amounts of all 4 compounds, A-D, must be utilized in order to obtain workable concrete viscosity. See Specification, page 45, table 9 and pages 45-53, Concrete tests 1 to 4 (W/B=12, 15, 20, and 30%). Note that in the specification W/C is referred to as the water to binder ratio, or W/B). Therefore, it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Yuasa to address problems in the art that were not contemplated by Yuasa. Namely, when ultra-high-strength concrete is to be formed, the required amounts and compounds in the copolymer of a cement dispersant must be within specific ranges, as claimed, in order to achieve workable concrete viscosity. Yuasa does not teach or suggest these specific amounts of compounds A-D.

For at least the reasons stated above, claim 8 would not have been rendered obvious by Yuasa. Claims 10-13 and 16 depend from claim 8 and, thus, also would not have been rendered obvious by Yuasa. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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